

**Amendments to the Specification:**

Please replace the fourth paragraph on page 3, beginning under "Summary of the Invention", at line 31, and continuing on page 4, with the following amended paragraph:

In a first aspect, the invention provides a white-light emitting device including a semiconductor light source having a peak emission from about 250 to about 550 nm and a phosphor blend including a first phosphor comprising  $(RE_{1-x}Sc_xCe_y)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+\delta}$   $(RE_{1-x-y}Sc_xCe_y)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+\delta}$ , where RE is selected from a lanthanide ion or  $Y^{3+}$ , A is selected from Mg, Ca, Sr, or Ba, B is selected from Mg and Zn, and where  $0 \leq p \leq 3$ ,  $0 \leq q \leq 3$ ,  $2.5 \leq z \leq 3.5$ ,  $0 \leq x < 1$ ,  $0 < y \leq 0.3$ ,  $-1.5 \leq \delta \leq 1.5$ .

Please replace the second paragraph on page 4, beginning "In a third aspect...", at line 10, with the following amended paragraph:

In a third aspect, the present invention provides a phosphor having the formula  $(RE_{1-x}Sc_xCe_y)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+\delta}$   $(RE_{1-x-y}Sc_xCe_y)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+\delta}$ , where RE is selected from a lanthanide ion or  $Y^{3+}$ , A is selected from Mg, Ca, Sr, or Ba, B is selected from Mg and Zn, and where  $0 \leq p \leq 3$ ,  $0 \leq q \leq 3$ ,  $2.5 \leq z \leq 3.5$ ,  $0 \leq x < 1$ ,  $0 < y \leq 0.3$ ,  $-1.5 \leq \delta \leq 1.5$ .

Please replace the fourth paragraph on page 4, beginning "In a fifth aspect...", at line 18, with the following amended paragraph:

In a fifth aspect, the present invention provides a phosphor blend including a first phosphor having the formula  $(Tb_{1-x-y-z-w}Y_xGd_yLu_zCe_w)_3M_rAl_{s-r}O_{12+\delta}$ , where M is selected from Sc, In, Ga, Zn, or Mg, and where  $0 < w \leq 0.3$ ,  $0 \leq x < 1$ ,  $0 \leq y \leq 0.4$ ,  $0 \leq z < 1$ ,  $0 \leq r \leq 4.5$ ,  $4.5 \leq s \leq 6$ , and  $-1.5 \leq \delta \leq 1.5$ , and a second phosphor having the formula  $(RE_{1-x}Sc_xCe_y)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+\delta}$   $(RE_{1-x-y}Sc_xCe_y)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+\delta}$ , where RE is selected from a lanthanide ion or  $Y^{3+}$ , A is selected from Mg, Ca, Sr, or Ba, B is selected from Mg and Zn, and where  $0 \leq p \leq 3$ ,  $0 \leq q \leq 3$ ,  $2.5 \leq z \leq 3.5$ ,  $0 \leq x < 1$ ,  $0 < y \leq 0.3$ ,  $-1.5 \leq \delta \leq 1.5$ .

Please replace the fifth paragraph on page 4, beginning "In a sixth aspect . . .", at line 26, with the following amended paragraph:

In a sixth aspect, the present invention provides a phosphor having the formula  $(\text{Ca}_{1-x-y-z}\text{Sr}_x\text{Ba}_y\text{Ce}_z)_3(\text{Sc}_{1-a-b}\text{Lu}_a\text{D}_b)_2\text{Si}_{n-w}\text{Ge}_w\text{O}_{12+\delta}$   ~~$(\text{Ca}_{1-x-y-z}\text{Sr}_x\text{Ba}_y\text{Ce}_z)_3(\text{Sc}_{1-a-c}\text{Lu}_a\text{D}_c)_2\text{Si}_{n-w}\text{Ge}_w\text{O}_{12+\delta}$~~ , where D is either Mg or Zn,  $0 \leq x < 1$ ,  $0 \leq y < 1$ ,  $0 < z \leq 0.3$ ,  $0 \leq a \leq 1$ ,  $0 \leq c \leq 1$ ,  $0 \leq w \leq 3$ ,  $2.5 \leq n \leq 3.5$ , and  $-1.5 \leq \delta \leq 1.5$ .

Please replace the sixth paragraph on page 4, beginning "In a seventh aspect. . .", at line 30, and continuing on page 5, with the following amended paragraph:

In a seventh aspect, the present invention provides a light source including an LED having an emission wavelength of from about 250 to about 500 nm and a phosphor composition comprising  $(\text{Ca}_{1-x-y-z}\text{Sr}_x\text{Ba}_y\text{Ce}_z)_3(\text{Sc}_{1-a-b}\text{Lu}_a\text{D}_b)_2\text{Si}_{n-w}\text{Ge}_w\text{O}_{12+\delta}$   ~~$(\text{Ca}_{1-x-y-z}\text{Sr}_x\text{Ba}_y\text{Ce}_z)_3(\text{Sc}_{1-a-c}\text{Lu}_a\text{D}_c)_2\text{Si}_{n-w}\text{Ge}_w\text{O}_{12+\delta}$~~ , where D is either Mg or Zn,  $0 \leq x < 1$ ,  $0 \leq y < 1$ ,  $0 < z \leq 0.3$ ,  $0 \leq a \leq 1$ ,  $0 \leq c \leq 1$ ,  $0 \leq w \leq 3$ ,  $2.5 \leq n \leq 3.5$ , and  $-1.5 \leq \delta \leq 1.5$ .

Please replace the third paragraph on page 11, beginning "In a second embodiment . . .", at line 25, and continuing on page 12, with the following amended paragraph:

In a second embodiment, the phosphor composition includes a phosphor composition with a garnet major phase and a secondary silicate phase having the formula  $(\text{RE}_{1-x}\text{Sc}_x\text{Ce}_y)_2\text{A}_{3-p}\text{B}_p\text{Si}_{z-q}\text{Ge}_q\text{O}_{12+\delta}$   ~~$(\text{RE}_{1-x-y}\text{Sc}_x\text{Ce}_y)_2\text{A}_{3-p}\text{B}_p\text{Si}_{z-q}\text{Ge}_q\text{O}_{12+\delta}$~~ , where RE is selected from a lanthanide ion or  $\text{Y}^{3+}$ , A is selected from Mg, Ca, Sr, or Ba, B is selected from Mg and Zn, and where  $0 \leq p \leq 3$ ,  $0 \leq q \leq 3$ ,  $2.5 \leq z \leq 3.5$ ,  $0 \leq x < 1$ ,  $0 < y \leq 0.3$ ,  $-1.5 \leq \delta \leq 1.5$ . The provision of z being from 2.5 to 3.5 allows for an "off-stoichiometric" phosphor without any significant changes in the luminescent properties of the material. In a preferred embodiment, RE = Y or Lu or Sc, with Lu or Sc particularly preferred,  $y \leq 0.05$ , A = Ca or Mg, with Ca being particularly preferred, B = Mg,  $2.9 \leq z \leq 3.1$ , and  $0 \leq q/(z-q) \leq 0.5$ . A preferred composition of this embodiment having a redder emission color has the formula  $(\text{RE}_{1-x}\text{Ce}_y)_2\text{A}_{3-p}\text{B}_p\text{Si}_{z-q}\text{Ge}_q\text{O}_{12+\delta}$   ~~$(\text{RE}_{1-y}\text{Ce}_y)_2\text{A}_{3-p}\text{B}_p\text{Si}_{z-q}\text{Ge}_q\text{O}_{12+\delta}$~~ , where  $[[x]]$  y, p, and q are defined above and RE is Lu. A particularly preferred composition is  $(\text{Lu}_{0.955}\text{Ce}_{0.045})_2\text{CaMg}_2\text{Si}_3\text{O}_{12}$ .

Please replace the second paragraph on page 12, beginning "The versatility of...", at line 12, with the following amended paragraph:

The versatility of the above phosphor compositions in LED lighting systems may be improved by the inclusion of Sc in the material. The peak emission of these materials compared to that of a conventional TAG:Ce phosphor can be shifted by controlling the amount of Sc in the host material. Thus, while the above phosphor compositions will typically have a significantly redder (longer wavelength) emission as compared to TAG:Ce, the addition of significant amounts of Sc to the phosphors will actually shift their emission to a comparable or even shorter wavelength as compared to TAG:Ce in the range of from about 0 to about 20 nm. Compositions that are rich in Sc (e.g.  $x=0.955$  in the formula  $(RE_{1-x}Sc_xCe_y)_2A_{1-r}B_{2+r}Si_{z-q}Ge_qO_{12+\delta}$ )  $(RE_{1-x-y}Sc_xCe_y)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+\delta}$  are yellow and can substitute for TAG:Ce in most applications, while Sc lean compositions (e.g.  $x=0.10$  in the same formula) will have a significant red shift in comparison to TAG:Ce as described above. This results in a very versatile phosphor that can be used in a variety of applications by simply modifying the amount of individual components in the phosphor.

Please replace the first paragraph on page 13, beginning "In a third embodiment . . .", at line 4, with the following amended paragraph:

In a third embodiment, the phosphor composition includes a phosphor composition having the formula  $(Ca_{1-x-y-z}Sr_xBa_yCe_z)_3(Sc_{1-a-b}Lu_aD_c)_2Si_{n-w}Ge_wO_{12+\delta}$   $(Ca_{1-x-y-z}Sr_xBa_yCe_z)_3(Sc_{1-a-c}Lu_aD_c)_2Si_{n-w}Ge_wO_{12+\delta}$ , where D is either Mg or Zn,  $0 \leq x < 1$ ,  $0 \leq y < 1$ ,  $0 < z \leq 0.3$ ,  $0 \leq a \leq 1$ ,  $0 \leq c \leq 1$ ,  $0 \leq w \leq 3$ ,  $2.5 \leq n \leq 3.5$ , and  $-1.5 \leq \delta \leq 1.5$ . In this embodiment, the LED preferably has a primary emission in the region of from 250 to 500 nm. In a preferred embodiment,  $0 \leq x \leq 0.1$ ,  $0 \leq y \leq 0.1$ ,  $0 < z \leq 0.01$ ,  $0 \leq a \leq 0.2$ ,  $D=Mg$ ,  $0 \leq c \leq 0.2$ ,  $2.9 \leq n \leq 3.1$ ,  $0 \leq w/(n-w) \leq 0.5$ .

Please replace the third paragraph on page 15, beginning "While suitable . . .", at line 27, and continuing on page 16, with the following amended paragraph:

While suitable in many applications alone with a blue or UV LED chip, the above two phosphor compositions may be blended with each other or one or more additional phosphors for use in LED light sources. Thus, in another embodiment, an LED lighting assembly is provided including a phosphor composition 22 comprising a blend of a phosphor from one of the above embodiments with one or more additional phosphors. When used in a lighting assembly in combination with a blue or near UV LED emitting radiation in the range of about 250 to 550 nm, the resultant light emitted by the assembly will be a white light. In one embodiment, the phosphor composition comprises a blend of the two phosphors  $(\text{RE}_{1-x}\text{Sc}_x\text{Ce}_y)_2\text{A}_{3-p}\text{B}_p\text{Si}_{z-q}\text{Ge}_q\text{O}_{12+\delta}$   $(\text{RE}_{1-x-y}\text{Sc}_x\text{Ce}_y)_2\text{A}_{3-p}\text{B}_p\text{Si}_{z-q}\text{Ge}_q\text{O}_{12+\delta}$ , and  $(\text{Tb}_{1-x-y-z-w}\text{Y}_x\text{Gd}_y\text{Lu}_z\text{Ce}_w)_3\text{M}_r\text{Al}_{s-r}\text{O}_{12+\delta}$ , as described above, and optionally one or more additional phosphors.

Please replace the first paragraph on page 16, beginning "In another preferred embodiment . . .", at line 5, and continuing on page 17, with the following amended paragraph:

In another preferred embodiment, the phosphor composition includes a blend of any combination of  $(\text{RE}_{1-x}\text{Sc}_x\text{Ce}_y)_2\text{A}_{3-p}\text{B}_p\text{Si}_{z-q}\text{Ge}_q\text{O}_{12+\delta}$   $(\text{RE}_{1-x-y}\text{Sc}_x\text{Ce}_y)_2\text{A}_{3-p}\text{B}_p\text{Si}_{z-q}\text{Ge}_q\text{O}_{12+\delta}$ ,  $(\text{Tb}_{1-x-y-z-w}\text{Y}_x\text{Gd}_y\text{Lu}_z\text{Ce}_w)_3\text{M}_r\text{Al}_{s-r}\text{O}_{12+\delta}$ ,  $(\text{Ga}_{1-x-y-z}\text{Sr}_x\text{Ba}_y\text{Ce}_z)_3(\text{Sc}_{4-a-b}\text{Lu}_a\text{D}_e)_2\text{Si}_{n-w}\text{Ge}_w\text{O}_{12+\delta}$   $(\text{Ca}_{1-x-y-z}\text{Sr}_x\text{Ba}_y\text{Ce}_z)_3(\text{Sc}_{1-a-c}\text{Lu}_a\text{D}_e)_2\text{Si}_{n-w}\text{Ge}_w\text{O}_{12+\delta}$  and TAG:Ce along with a blue-green phosphor and a red phosphor. The relative amounts of each phosphor in the phosphor composition can be described in terms of spectral weight. The spectral weight is the relative amount that each phosphor contributes to the overall emission spectra of the phosphor blend. The spectral weight amounts of all the individual phosphors should add up to 1. A preferred blend comprises a spectral weight of from 0.001 to 0.200 for the blue-green phosphor, from 0.001 to 0.300 of the red phosphor, and the balance of the blend being  $(\text{RE}_{1-x}\text{Sc}_x\text{Ce}_y)_2\text{A}_{3-p}\text{B}_p\text{Si}_{z-q}\text{Ge}_q\text{O}_{12+\delta}$   $(\text{RE}_{1-x-y}\text{Sc}_x\text{Ce}_y)_2\text{A}_{3-p}\text{B}_p\text{Si}_{z-q}\text{Ge}_q\text{O}_{12+\delta}$ ,  $(\text{Tb}_{1-x-y-z-w}\text{Y}_x\text{Gd}_y\text{Lu}_z\text{Ce}_w)_3\text{M}_r\text{Al}_{s-r}\text{O}_{12+\delta}$ ,  $(\text{Ga}_{1-x-y-z}\text{Sr}_x\text{Ba}_y\text{Ce}_z)_3(\text{Sc}_{4-a-b}\text{Lu}_a\text{D}_e)_2\text{Si}_{n-w}\text{Ge}_w\text{O}_{12+\delta}$   $(\text{Ca}_{1-x-y-z}\text{Sr}_x\text{Ba}_y\text{Ce}_z)_3(\text{Sc}_{1-a-c}\text{Lu}_a\text{D}_e)_2\text{Si}_{n-w}\text{Ge}_w\text{O}_{12+\delta}$

$w\text{Ge}_w\text{O}_{12+\delta}$  and/or TAG:Ce. Any known blue-green and red phosphor suitable for use in UV or blue LED systems may be used. In addition, other phosphors such as green, blue, orange, or other color phosphors may be used in the blend to customize the white color of the resulting light and produce higher CRI sources. When used in conjunction with a LED chip emitting at from, e.g., 250 to 550 nm, the lighting system preferably includes a blue phosphor for converting some, and preferably all, of the LED radiation to blue light, which in turn can then be efficiently converted by the present inventive phosphors. While not intended to be limiting, suitable phosphor for use in the blend with the present invention phosphors include:

BLUE:

$(\text{Ba}, \text{Sr}, \text{Ca})_5(\text{PO}_4)_3(\text{Cl}, \text{F}, \text{Br}, \text{OH}):\text{Eu}^{2+}, \text{Mn}^{2+}, \text{Sb}^{3+}$   
 $(\text{Ba}, \text{Sr}, \text{Ca})\text{MgAl}_{10}\text{O}_{17}:\text{Eu}^{2+}, \text{Mn}^{2+}$   
 $(\text{Ba}, \text{Sr}, \text{Ca})\text{BPO}_5:\text{Eu}^{2+}, \text{Mn}^{2+}$   
 $(\text{Sr}, \text{Ca})_{10}(\text{PO}_4)_6 \cdot n\text{B}_2\text{O}_3:\text{Eu}^{2+}$   
 $2\text{SrO} \cdot 0.84\text{P}_2\text{O}_5 \cdot 0.16\text{B}_2\text{O}_3:\text{Eu}^{2+}$   
 $\text{Sr}_2\text{Si}_3\text{O}_8 \cdot 2\text{SrCl}_2:\text{Eu}^{2+}$   
 $\text{Ba}_3\text{MgSi}_2\text{O}_8:\text{Eu}^{2+}$   
 $\text{Sr}_4\text{Al}_{14}\text{O}_{25}:\text{Eu}^{2+}$  (SAE)  
 $\text{BaAl}_8\text{O}_{13}:\text{Eu}^{2+}$

BLUE-GREEN:

$\text{Sr}_4\text{Al}_{14}\text{O}_{25}:\text{Eu}^{2+}$   
 $\text{BaAl}_8\text{O}_{13}:\text{Eu}^{2+}$   
 $2\text{SrO} \cdot 0.84\text{P}_2\text{O}_5 \cdot 0.16\text{B}_2\text{O}_3:\text{Eu}^{2+}$   
 $(\text{Ba}, \text{Sr}, \text{Ca})\text{MgAl}_{10}\text{O}_{17}:\text{Eu}^{2+}, \text{Mn}^{2+}$   
 $(\text{Ba}, \text{Sr}, \text{Ca})_5(\text{PO}_4)_3(\text{Cl}, \text{F}, \text{OH}):\text{Eu}^{2+}, \text{Mn}^{2+}, \text{Sb}^{3+}$

GREEN:

$(\text{Ba}, \text{Sr}, \text{Ca})\text{MgAl}_{10}\text{O}_{17}:\text{Eu}^{2+}, \text{Mn}^{2+}$  (BAMn)  
 $(\text{Ba}, \text{Sr}, \text{Ca})\text{Al}_2\text{O}_4:\text{Eu}^{2+}$   
 $(\text{Y}, \text{Gd}, \text{Lu}, \text{Sc}, \text{La})\text{BO}_3:\text{Ce}^{3+}, \text{Tb}^{3+}$   
 $\text{Ca}_8\text{Mg}(\text{SiO}_4)_4\text{Cl}_2:\text{Eu}^{2+}, \text{Mn}^{2+}$   
 $(\text{Ba}, \text{Sr}, \text{Ca})_2\text{SiO}_4:\text{Eu}^{2+}$   
 $(\text{Ba}, \text{Sr}, \text{Ca})_2(\text{Mg}, \text{Zn})\text{Si}_2\text{O}_7:\text{Eu}^{2+}$   
 $(\text{Sr}, \text{Ca}, \text{Ba})(\text{Al}, \text{Ga}, \text{In})_2\text{S}_4:\text{Eu}^{2+}$   
 $(\text{Y}, \text{Gd}, \text{Tb}, \text{La}, \text{Sm}, \text{Pr}, \text{Lu})_3(\text{Al}, \text{Ga})_5\text{O}_{12}:\text{Ce}^{3+}$   
 $(\text{Ca}, \text{Sr})_8(\text{Mg}, \text{Zn})(\text{SiO}_4)_4\text{Cl}_2:\text{Eu}^{2+}, \text{Mn}^{2+}$  (CASI)  
 $\text{Na}_2\text{Gd}_2\text{B}_2\text{O}_7:\text{Ce}^{3+}, \text{Tb}^{3+}$   
 $(\text{Ba}, \text{Sr})_2(\text{Ca}, \text{Mg}, \text{Zn})\text{B}_2\text{O}_6:\text{K}, \text{Ce}, \text{Tb}$

YELLOW-ORANGE:

$(\text{Sr}, \text{Ca}, \text{Ba}, \text{Mg}, \text{Zn})_2\text{P}_2\text{O}_7:\text{Eu}^{2+}, \text{Mn}^{2+}$  (SPP);  
 $(\text{Ca}, \text{Sr}, \text{Ba}, \text{Mg})_{10}(\text{PO}_4)_6(\text{F}, \text{Cl}, \text{Br}, \text{OH}):\text{Eu}^{2+}, \text{Mn}^{2+}$  (HALO);

RED:

